

PHYSICS-9

CHAPTER-9

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CHAPTER-9

TRANSFER OF HEAT

Q-1: What is meant by transfer of heat? What are the ways of transfer of heat?

TRANSFER OF HEAT:

“When two bodies at different temperature are in thermal contact with each other, Thermal energy from a hot body flows to a cold body in the form of heat. This is called as transfer of heat”.

Explanation:

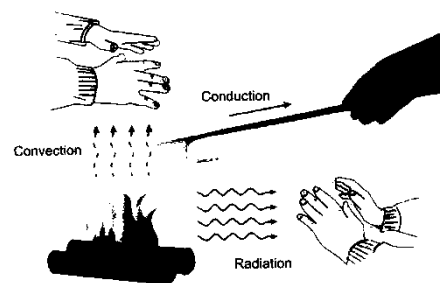
Transfer of heat is a natural process. It continues all the time as long as the bodies in thermal contact are at different temperature.

Ways of Transfer of Heat:

There are three ways by which transfer of heat takes place.

These are:

- i. Conduction
- ii. Convection
- iii. Radiation



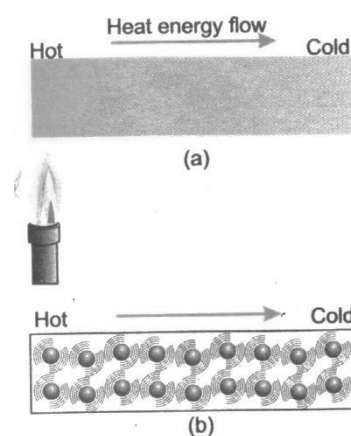
Q-2: What is the process of conduction? Explain it briefly. Also explain that why metals are good conductors than non-metals?

CONDUCTION:

“The mode of transfer of heat by vibrating atoms and free electrons in solids from hot to cold parts of a body is called conduction of heat”.

Explanation:

In solids, atoms and molecules are packed close together. They continue to vibrate about their mean position. When one of its ends is heated, the atoms or molecules present at that end begin to vibrate more rapidly. They also collide with their neighboring atoms or molecules. In doing so, they pass some of their energy to neighboring atoms or molecules during collisions with them with the increase in their vibrations. These atoms or molecules in turn pass on a part of the energy to their neighboring particles. In this way some heat reaches the other parts of the solids. This is a slow process and very small transfer of heat takes place from hot to cold parts in solids.



Conductors:

“The substances through which heat conducts easily are called conductors”.

For Example:

All metals (aluminum, iron, copper etc.) are good conductors of heat.

Insulators:

“The substances through which heat does not conduct easily are called bad conductors or insulators”.

For Example: Wood, cork, cotton, wool, glass, rubber, etc. are bad conductors or insulators.

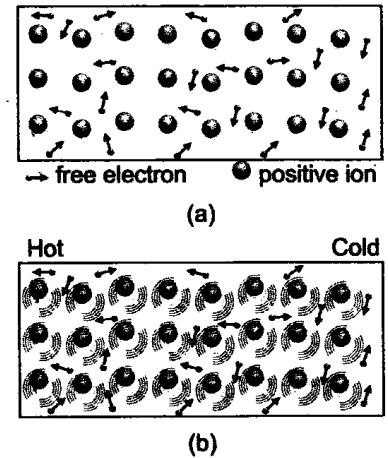
اگر تم محنت کے عادی ہو تو بھوک اور افلاس تمہارے قریب نہیں آسکتی۔ (منجمن فرینکلن)

Metals are Good Conductor than Non-Metals:

The handle of metal spoon held in hot water soon gets warm. But in case of a wooden spoon, the handle does not get warm. Both the materials behave differently regarding the transfer of heat. Both metals and non-metals conduct heat. Metal are generally better conductors than non-metals.

Reasons:

Heat flow from hot to cold parts in metals so rapidly than non-metals, because metals have free electrons. These free electrons move with very high velocities within the metal objects. They carry energy at a very fast rate from hot to cold parts of the object as they move. Thus, heat reaches the cold parts of the metal objects from its hot part much more quickly than non-metals.



Q-3: What is thermal conductivity and rate of flow of heat? On what factors rate of flow of heat depends. Derive its formula.

THERMAL CONDUCTIVITY:

Thermal conductivity of a substance can be defined as:

“The rate of flow of heat across the opposite faces of a metre cube of a substance maintained at a temperature difference of one kelvin is called the thermal conductivity of that substance”.

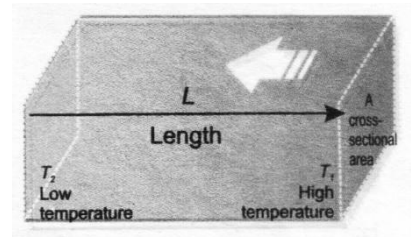
Rate of Flow of Heat:

“The amount of heat that flows in unit time is called the rate of flow of heat”.

Explanation:

Conduction of heat occurs at different rates in different materials. In metals, heat flows rapidly as compared to insulators such as wood or rubber.

Consider a solid block. One of its two opposite faces each of cross-sectional area A is heated to a temperature T_1 . Heat Q flows along its length L to opposite face at temperature T_2 in t seconds. Thus



$$\text{Rate of flow of heat} = \frac{Q}{t} \dots\dots\dots (1)$$

Factors on which Rate of Flow of Heat Depends:

It is observed that the rate at which heat flows through a solid object depends upon various factors.

i. Cross-Sectional Area of the Solid:

Larger cross-sectional area A of a solid contains larger number of molecules and free electrons on each layer parallel to its cross-sectional area and hence greater will be the rate of flow of heat through the solid. Thus

$$\frac{Q}{t} \propto A$$

ii. Length of the Solid:

Larger is the length between the hot and cold ends of the solid, more time it will take to conduct heat to the colder end and smaller will be the rate of flow of heat. Thus

$$\frac{Q}{t} \propto \frac{1}{L}$$

iii. Temperature Difference between Ends:

Greater is the temperature difference $T_1 - T_2$ between hot and cold faces of the solid, greater will be the rate of flow of heat. Thus

$$\frac{Q}{t} \propto T_1 - T_2$$

Combining the above factors, we get

$$\frac{Q}{t} \propto \frac{A (T_1 - T_2)}{L}$$
$$\frac{Q}{t} = \frac{kA(T_1 - T_2)}{L} \dots\dots\dots (2)$$

Here k is the proportionality constant called thermal conductivity of the solid. Its value depends on the nature of the substance and is different for different materials. From equation (2) we can find k as:

$$k = \frac{Q}{t} \times \frac{L}{A (T_1 - T_2)} \dots\dots\dots (3)$$

Unit of k : In SI the unit of k is $\text{Wm}^{-1}\text{K}^{-1}$.

Table: Thermal conductivities of some substances are given in the table.

Thermal Conductivities of some Substances	
Substance	$\text{Wm}^{-1}\text{K}^{-1}$
Air (dry)	0.026
Aluminum	245
Brass	105
Brick	0.6
Copper	400
Glass	0.8
Ice	1.7
Iron	85
Lead	35
Plastic foam	0.03
Rubber	0.2
Silver	430
Water	0.59
Wood	0.08

Q-4: In houses which measures are taken to save energy? Also describe the uses of conductors and non-conductors?

IMPORTANT MEASURES TO SAVE ENERGY IN HOUSES:

In houses, good thermal insulation means lower consumption of fuel. For this, following measures may be taken to save energy.

- Hot water tanks are insulated by plastic or foam lagging.
- Wall cavities are filled with plastic foam or wool
- Ceiling of rooms is covered by insulating materials (false ceiling).
- Double glazed window panes are used. These window panes have air between glass sheets that provides good insulation.

Uses of Conductors:

Good conductors are used when quick transfer of heat is required through a body. Thus

- i. Cookers, cooking plate, boiler, radiators and condensers of refrigerators, etc. are made of metals such as aluminum or copper.

- ii. Similarly, metal boxes are used for making ice, ice cream, etc.

Uses of Non-Conductors:

- Insulators or bad conductors are used in home utensils such as handles of sauce pans, hot plates, spoons, etc. they are made up of wood or plastic.
- Air is one of the bad conductors or best insulator. That is why cavity walls i.e. two walls separated by an air space and double glazed windows keep the houses warm in winter and cool in summer.
- Materials which trap air i.e. wool, felt, fur, feathers, polystyrenes, fibre glass are also bad conductors. Some of these materials are used for laggings to insulate water pipes, hot water cylinders, ovens, refrigerators, walls and roofs of houses.
- Woolen cloth is used to make warm winter clothes.

Q-5: What is convection process? Describe it briefly.

CONVECTION:

“Transfer of heat by actual movement of molecules from hot place to a cold place is known as convection”.

Explanation:

Liquids and gases are poor conductors of heat. However, heat is transferred through fluids easily by another method called convection.

A liquid or a gas becomes lighter as it expands on heating. Hot liquid or gas rises up above the heated area. The cooler liquid or gas from the surroundings fills the place which in turns is heated up. In this way, all the fluid is heated up. Therefore, transfer of heat through fluids takes place by the actual movement of heated molecules from hot to cold parts of the fluid.

Experiment:

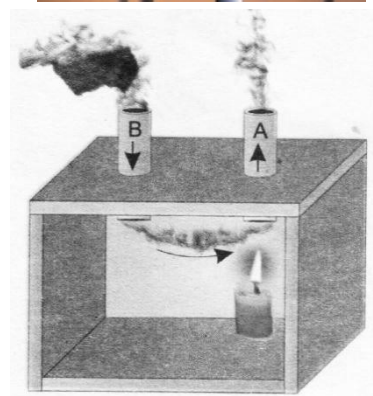
Take a beaker and fill two-third of it with water. Heat the beaker by keeping a burner below it drop two or three crystals of potassium permanganate in the water. It will be seen that coloured streaks of water formed by the crystals move upwards above the flame and then move downwards from side ways. These coloured streaks show the path of currents in the liquid. The liquid currents stop on removing the burner under the beaker.



When the water at the bottom of the beaker gets hot, it expands, becomes lighter and rises up. While the cold but denser water moves downward to take its place.

Convection Currents in Air:

Gases also expand on heating, thus convection currents are easily set up due to the differences in the densities of air at various parts in the atmosphere. This can be observed by a simple experimental set up as shown in figure.



Use of Convection Currents:

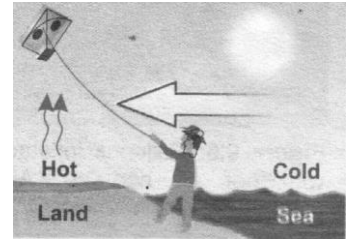
- Convection currents set up by electric, gas or coal heaters help to warm our homes and offices.
- Central heating systems in buildings work on the same principle by convection.
- Convection currents occur on a large scale in nature. The day-to-day temperature changes in the atmosphere result from the circulation of warm or cold air that travels across the region
- Land and sea breezes are also the examples of convection currents.

Q-6: Write a note on land and sea breezes and gliding?**a) LAND AND SEA BREEZES:**

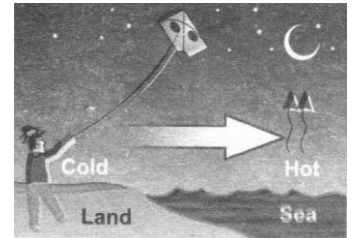
Land and sea breezes are the result of convection.

Sea Breeze:

On a hot day, the temperature of the land increases more quickly than the sea. It is because the specific heat of land is much smaller as compared to water. The air above land gets hot and rises up. Cold air from the sea begins to move towards the land. It is called sea breeze.

**Land Breeze:**

At night, the land cools faster than the sea. Therefore, air above the sea is warmer, rises up and the cold air from the land begins to move towards the sea. It is called land breeze.

**Importance:**

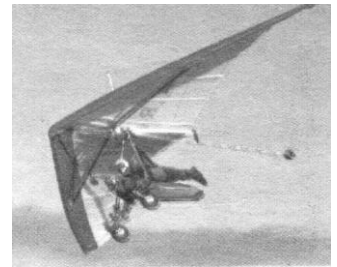
The land and sea breezes help to keep the temperature moderate in coastal areas.

b) GLIDING:

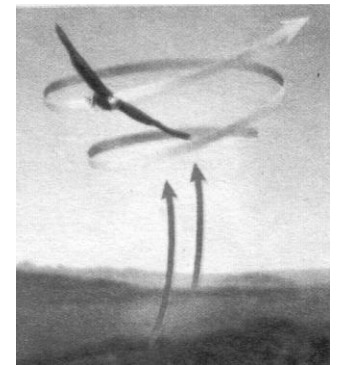
A glider looks like a small aeroplane without engine.

Principle of Gliding:

Glider pilots use upward movement of hot air currents due to convection of heat. These rising currents of hot air are called thermals. Gliders ride over these thermals. The upward movement of air currents in thermals helps them to stay in air for a long period.

**Process of Gliding in Birds:**

The birds stretch out their wings and circle in these thermals. The upward movement of air helps birds to climb up with it. Eagles, hawks and vultures are expert thermal climbers. After getting a free lift, birds are able to fly for hours without flapping their wings. They glide from one thermal to another and thus travel through large distances and hardly need to flap their wings.

**Q-7: What is radiation process? Explain by giving examples.****RADIATION:**

“Radiation is the mode of transfer of heat from one place to another in the form of waves called electromagnetic waves”.

Explanation:

Our Sun is the major source of heat energy. It reaches us neither by conduction nor by convection, because the space between the Sun and the Earth's atmosphere is empty. There is a third mode called radiation by which heat travels from one place to another. It is through radiation that heat reaches us from the Sun.

Heat does not reach us by conduction through air from a fireplace because air is a poor conductor of heat. Heat does not reach us by convection because the air getting heat from the fireplace does not move in all directions. Hot air moves upward from the fireplace. Heat from the fireplace reaches us directly by a different process in the form of waves called radiation. A sheet of paper or cardboard kept in the path of radiations stop these waves to reach us.

Factors on which Radiation Depends:

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Radiations are emitted by all bodies. The rate at which radiations are emitted depends upon various factors such as

- i. Colour and texture of the surface
- ii. Surface temperature
- iii. Surface area

Remember That:

All the objects, lying inside a room including the walls, roof and floor of the room are radiating heat. However, they are also absorbing heat at the same time.

Radiation of Heat through Objects:

When temperature of an object is higher than its surroundings then it is radiating more heat than it is absorbing. As a result, its temperature goes on decreasing till it becomes equal to its surroundings. At this stage, the body is giving out the amount of heat equal to the amount of heat it is absorbing.

Absorption of Heat in Objects:

When temperature of an object is lower than its surroundings, then it is radiating less heat than it is absorbing. As a result, its temperature goes on increasing till it becomes equal to its surroundings.

Q-8: How emission and absorption of radiation can be explained by Leslie’s cube?

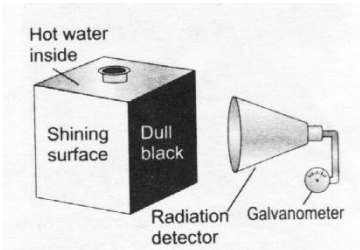
Emission and Absorption of Radiation:

The rate at which various surfaces emit heat depends upon the nature of the surface. Various surfaces can be compared using Leslie's cube.

Leslie Cube:

A Leslie cube is a metal box having faces of different nature. The four faces of Leslie's cube may be as follows:

- A shining silvered surface
- A dull black surface
- A white surface
- A coloured surface

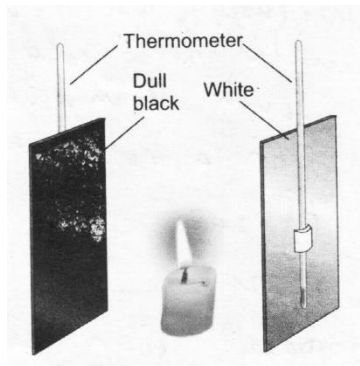


Hot water is filled in the Leslie's cube and is placed with one of its face towards a radiation detector. It is found that black dull surface is a good emitter of heat.

The rate at which various surfaces absorb heat also depends upon the nature of those surfaces.

For Example:

Take two surfaces, one is dull black and the other is a silver polished surface with a candle at the middle of the surface. It is found that a dull black surface is a good absorber of heat as its temperature rises rapidly.



A polished surface is poor absorber of heat as its temperature rises very slowly. The observations made from the set up shown in figure are shown in the table given below:

Surfaces	Emitter	Absorber	Reflector
Dull black surface	best	best	worst
Coloured surface	good	good	bad
White surface	bad	bad	good
Shining silvered surface	worst	worst	best

Relation of Surface Area with Radiations:

It is also found that the transfer of heat by radiation is also affected by the surface area of the body emitting or absorbing heat. Larger is the area, greater will be the transfer of heat. It is due to this reason that large numbers of slots are made in radiators to increase their surface area.

Q-9: What are the application and consequence of radiation?

APPLICATION AND CONSEQUENCE OF RADIATION:

Absorption of Heat:

- Different objects absorb different amount of heat radiations falling upon them reflecting the remaining part. The amount of heat absorbed by a body depends upon the colour and nature of its surface.
- A black and rough surface absorbs more heat than a white or polished surface.
- Since good absorbers are also good radiators of heat. Thus, a black coloured body gets hot quickly absorbing heat reaching it during a sunny day and also cools down quickly by giving out its heat to its surroundings.
- The bottoms of cooking pots are made black to increase the absorption of heat from fire.

Reflection of Heat:

- Like light rays, heat radiations also obey laws of reflection. The amount of heat reflected from an object depends upon its colour and nature of the surface.
- White surfaces reflect more than coloured or black surfaces.
- Similarly, polished surfaces are good reflectors than rough surfaces and reflection of heat radiations is greater from polished surfaces.
- Hence, we wear white or light coloured clothes in summer which reflect most of the heat radiation reaching us during the hot day.
- We polish the interior of the cooking and hot-pots for reflecting back most of the heat radiation within them.

Q-10: What is greenhouse? What is the effect of green house in nature?

GREENHOUSE:

“Green house is a house formed by the glass and transparent polythene sheets. It is used for the batter growth of some plants”.

Greenhouse Effect:

Light from the sun contains thermal radiations (infrared) of long wavelengths as well as light and ultraviolet radiations of short wavelengths. Glass and transparent polythene sheets allow radiations of short wavelength to pass through easily but not long wavelengths of thermal radiations. Thus, a greenhouse becomes a heat trap.

Radiations from the Sun pass easily through glass and warms up the objects in a greenhouse. These objects and plants give out radiation of much longer wavelengths. Glass and transparent polythene sheets do not allow them to escape out easily and are reflected back in the greenhouse. This maintains the inside temperature of the greenhouse. Greenhouse effect promises better growth of some plants.

Green House Effect in Atmosphere:

Earth’s atmosphere contains carbon dioxide and water vapours. It causes greenhouse effect and thus maintains the temperature of the Earth.

Global Warming:

During the recent years, the percentage of carbon dioxide has been increased considerably.

جو آدمی جتنا زیادہ بولتا ہے اتنا ہی کم عقل ہوتا ہے۔ (خلیل جبران)

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This has caused an increase in the average temperature of the Earth by trapping more heat due to greenhouse effect. This phenomenon is known as global warming. This has serious implications for the global climate.

DO YOU KNOW

1. Think of objects around us getting heat or giving out heat?

Ans: a) At room temperature a hot tea cup cools slowly because it gives out its heat surroundings.
b) At room temperature ice cube melts soon because it gets heat from the surroundings.
c) The glass of greenhouse gets heat etc.

2. Why Styrofoam boxes are used to keep food hot or ice cream cold for a long time?

Ans: Styrofoam is a bad conductor of heat. It does not allow heat to leave or enter the box easily.

3. Is water a good conductor of heat or not?

Ans: Water is a poor conductor of heat. Water at the top in the test tube starts boiling after getting heat from the burner without melting ice.

4. Why sauce pans are made of metal?

Ans: Sauce pans are made of metal for quick heat transfer.

5. How birds get warmed?

Ans: Feathers give good thermal insulation especially when fluffed up.

6. How a thermos flask works?

Ans: In a thermos flask, most of the heat is prevented to enter or leave the flask. This is done by a suitable measure to reduce the transfer of heat due to conduction, convection and radiation. Thus, anything kept in it, maintains its temperature for a long time.

MULTIPLE CHOICE EXERCISE

Q-9.1: Multiple Choice Questions:

- i. In solids, heat is transferred by

a) radiation	b) conduction
c) convection	d) absorption
- ii. What happens to the thermal conductivity of a wall if its thickness is doubled

a) becomes double	b) remains the same
c) becomes half	d) becomes one fourth
- iii. Metals are good conductor of heat due to the

a) free electrons	b) big size of their molecules
c) small size of their molecules	d) rapid vibrations of their atoms
- iv. In gases, heat is transferred by

a) molecular collision	b) conduction
c) convection	d) radiation
- v. Convection of heat is the process of heat transfer due to the

a) random motion of molecules	b) downward movement of molecules
c) upward movement of molecules	d) free movement of molecules
- vi. False ceiling is done to

a) lower the height of ceiling	b) keep the roof clean
c) cool the room	d) insulate the room

اگر تم تعلیم کی مصیبت کو برداشت نہیں کر سکتے تو تمہیں ہمیشہ کی ذلت جھیلنا ہی ہوگی۔ (مولانا محمد علی جوہر)

- vii. Rooms are heated using gas heaters by
- a) conduction only

b) convection and radiation

c) radiation only

d) convection only
- viii. Land breeze blows from
- a) sea to land during night

b) sea to land during day

c) land to sea during night

d) land to sea during the day
- ix. Which of the following is a good radiator of heat?
- a) a shining silver surface

b) a dull black surface

c) a white surface

d) a green coloured surface

CHAPTER-9			9 th PHYSICS MCQS ANSWERS					
i	ii	iii	iv	v	vi	vii	viii	ix
b	c	a	c	c	d	b	c	b

REMAINING EXERCISE

- Q-9.2: Why metals are good conductors of heat?
- Ans: See Notes Q-2
- Q-9.3: Explain why
- a. A metal feels colder to touch than wood kept in a cold place.

Ans: Metals have low heat capacity and also metals are good conductor of heat than non-metals (wood). That is why a metal feels colder to touch than wood when kept in a colder place.

b. Land breeze blows from land towards sea.

Ans: See Notes Q-6

c. Double walled glass vessel is used in thermos flask?

Ans: See notes “Do You Know” Q-6

d. Deserts soon get hot during the day and soon get cold after sunset?

Ans: Deserts soon get hot during day and soon get cold after sun set because sand has low specific heat capacity.
- Q-9.4: Why conduction of heat does not take place in gases?
- Ans: As free electrons which are responsible for the conduction of heat from one part to another part, are not present in gases. Hence heat is not transferred in gases through conduction.
- Q-9.5: What measures do you suggest to conserve energy in houses?
- Ans: See Notes Q-4
- Q-9.6: Why transfer of heat in fluids takes place by convection?
- Ans: See Notes Q-5
- Q-9.7: What is meant by convection current?
- Ans: See Notes Q-5
- Q-9.8: Suggest a simple activity to show convection of heat in gases not given in the book?
- Ans: Take a balloon and release it in the middle of the room in which there is a fire in fire place at one corner. The balloon will initially move towards the corner at which there is a fire place and rises up. This movement of balloon is due to the motion of convection current of air.
- Q-9.9: How does heat reach us from the Sun?

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Ans: See Notes Q-7

Q-9.10: How various surfaces can be compared by a Leslie cube?

Ans: See Notes Q-8

Q-9.11: What is greenhouse effect?

Ans: See Notes Q-10

Q-9.12: Explain the impact of greenhouse effect in global warming?

Ans: See Notes Q-10

FORMULAE USE IN CHAPTER-9

1. Rate of Flow of Heat = $\frac{Q}{t}$
2. $\frac{Q}{t} = \frac{kA(T_1 - T_2)}{L}$ (Thermal Conductivity)

EXAMPLES

Example 9.1: The exterior brick wall of a house of thickness 25 cm has an area 20 m². The temperature inside the house is 15 °C and outside is 35 °C. Find the rate at which thermal energy will be conducted through the wall, the value of k for bricks is 0.6 Wm⁻¹K⁻¹.

Sol:

Thickness of wall	= L	= 25 cm = 0.25 m
Area of wall	= A	= 20 m ²
Temperature outside the house	= T ₁	= 35 °C = 35 + 273 = 308 K
Temperature inside the house	= T ₂	= 15 °C = 15 + 273 = 288 K
Thermal conductivity constant	= K	= 0.6 Wm ⁻¹ K ⁻¹
Rate of flow of heat	= $\frac{Q}{t}$	= ?

Now

$$\begin{aligned} \frac{Q}{t} &= \frac{kA(T_1 - T_2)}{L} \\ &= \frac{(0.6)(20)(308 - 288)}{0.25} \\ &= \frac{(0.6)(20)(20)}{0.25} \\ \frac{Q}{t} &= 960 \text{ Js}^{-1} \end{aligned}$$

PROBLEMS

Problem 9.1: The concrete roof of a house thickness 20 cm has an area 200 m². The temperature inside the house is 15 °C and outside is 35 °C. Find the rate at which thermal energy will be conducted through the roof. The value of k for concrete is 0.65 Wm⁻¹K⁻¹.

Sol:

Thickness of roof	= L	= 20 cm = 0.2 m
Area of roof	= A	= 200 m ²
Temperature outside the house	= T ₁	= 35 °C = 35 + 273 = 308 K
Temperature inside the house	= T ₂	= 15 °C = 15 + 273 = 288 K
Thermal conductivity constant	= k	= 0.65 Wm ⁻¹ K ⁻¹
Rate of flow of heat	= $\frac{Q}{t}$	= ?

Now

$$\frac{Q}{t} = \frac{kA(T_1 - T_2)}{L}$$

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$$= \frac{(0.65)(200)(308 - 288)}{0.2}$$

$$= \frac{(0.65)(200)(20)}{0.2}$$

$$\frac{Q}{t} = 13000 \text{ Js}^{-1}$$

Problem 9.2: How much heat is lost in an hour through a glass window measuring 2 m by 2.5 m when inside temperature is 25 °C and that of outside is 5 °C, the thickness of glass is 0.8 cm and the value of k for glass is 0.8 Wm⁻¹K⁻¹?

Sol: Time = t = 1 hr = 60 x 60 = 3600 sec
 Thickness of wall = L = 0.8 cm = 0.008 m
 Area of wall = A = 2m x 2.5m = 5 m²
 Temperature inside the house = T₁ = 25 °C = 25 + 273 = 298 K
 Temperature outside the house = T₂ = 5 °C = 5 + 273 = 278 K
 Thermal conductivity constant = k = 0.8 Wm⁻¹K⁻¹
 Quantity of heat = Q = ?
 Now

$$\frac{Q}{t} = \frac{kA(T_1 - T_2)}{L}$$

$$Q = \frac{kA(T_1 - T_2)t}{L}$$

$$= \frac{(0.8)(5)(298 - 278)(3600)}{0.008}$$

$$= \frac{(0.8)(5)(20)(3600)}{0.008}$$

$$= 36000000 \text{ J}$$

$$Q = 3.6 \times 10^7 \text{ J}$$

باتوں سے خوشبو آئے

• میں میرے زمانہ کو تیار کر رہی ہوں۔ لالہ وحید اور نجم، انسان کا سب سے بڑا دشمن جسم اور مافی ہے۔
 • دنیا میں وہی لوگ کامیاب ہوتے ہیں جو کچھ کے مانع کو پہنچنا نہ دیکھ سکیں۔
 • اگر کوئی شخص غلام پانی ہے تو والدین کی خدمت کر دے۔ دنیا میں ان لوگوں کی عزت ہوتی ہے جو اساتذہ کی عزت کرتے ہیں۔
 • علم ایک ایسا ہادل ہے جس سے لفظ کی رحمت برقی ہے۔ آوی ملے سے بڑا رہتا ہے، مکالمے سے اس میں تیز رفتاری ہے۔
 اس کی اہمیت کھرجانی ہے۔

صلہ

جب انسان اپنے ہاتھ سے صلہ دیتا ہے تو اس وقت صلہ پاؤں ہاتھ میں آتا ہے جس کا فی الحال تمام نے مجھے یاد دہانی میں تیرے مرنے تھا لیکن تم نے اب مجھے دوست بنالیا ہے آج سے پہلے میری خواہش کرتا تھا لیکن آج سے میں تیری حفاظت کروں گا میں حقیر ہوں تو نے مجھے عظیم یاد دلایا پہلے میں تیرے ہاتھ میں تھا اور اب میں لفظ تعالیٰ کے ہاتھ میں ہوں۔

لفظ لفظ خوشبو

اس شخص کو برا سمجھو جس کو کوئی دوست نہیں اور اسے اس سے بھی زیادہ برا سمجھو جسے ایک دوست ظاہر اس نے اسے کھو دیا۔ بہترین دوست وہ ہوتا ہے جو خوشی کے لمحات کے ساتھ ساتھ دکھ کے لمحوں میں بھی آپ کا ہجر پر ساتھ دے جو شخص اپنے دوست کو چھوڑ دے وہ بد نصیب ہے۔ وہ اس کا دشمن ہے۔ جب تک تم دل کو پریشان نہیں کر دے گے اس وقت تک تم دوسروں کی پریشانیوں کو دور نہیں کر سکتے اگر کسی کو تیار دے۔ اسے سب سے بڑا دشمن بنائیں تو اسے اچھا نہیں کر دے گا۔ نرم اور سلیکھ لفظ لفظ سے صلہ طاقور ہوتے ہیں۔ جس سے جس میں جی بھرت ہوں سے کسی معاملے میں مقابلہ کر دے کسی کی خالی کاہلقت مت از دہ جس کو دور کر اس کی بخلت مت ہو۔ کسی بھی انسان سے صلہ دے یہ ظاہر انداز سے خود تیار دے دیادہ تو اس کے دل میں رہے۔

اقوال زریں

سہاکی کا ایمان بھی بھی نہیں چھوڑا کیونکہ ہے انسان کا سرچہ مافی ہوتا ہے دھرم کو تو اس کو پر راکھ کر کے قیامت کے دن اللہ دے کے بارے میں پوچھنے کا۔ دوسروں کی عزت کر دے تو کوئی تیار ہی عزت اور احترام کرے گا۔ اللہ کی عبادت کرنا اللہ کے ساتھ کسی کو شریک مت کرنا۔ بہترین زندگی بسر کرنے کا، از اللہ تعالیٰ کا ذکر کرنا ہے اپنی خوشی کی خاطر دوسروں کی خوشیاں مت برباد کرو۔ حقیر کے فیصلے سے ہر انسان بد رہتا ہے۔ دلوں کی زبان اس کی آگ ہوتی ہے اور عقل منہ دینی زبان کا خود آگ ہوتا ہے۔ جس طرح خاموشی پانی کی گہری تیرید ہوتی ہے اسی طرح خاموش انسان میں سوچنے سمجھنے کی صلاحیت زیادہ ہوتی ہے۔